DOCUMENT RESUME

ED 087 441 IR 000 185

AUTHOR	Worner, Roger B.
TITLE	PPBS And the Derivation of Cost/Effectiveness.
PUB DATE	Apr 73
NOTE	8p.; Paper presented at the Association of Educational Data Systems Annual Convention (New Orleans, Louisiana, April 16 through 19, 1973)
EDRS PRICE	MF-$0.65 HC-$3.29
DESCRIPTORS	Budgeting; *Cost Effectiveness; Decision Making; *Educational Accountability; Educational Administration; Management Systems; *Planning; Program Budgeting; Program Descriptions; Program Effectiveness; *Programing; *Program Planning; Resource Allocations; School Planning; School Systems
IDENTIFIERS	AEDS; Association for Educational Data Systems; *Planning Programing Budgeting Systems; PPBS

ABSTRACT

Planning-programing-budgeting systems (PPBS) have borne few of the fruits that many claimed they would. This is partly due to the five following widely held misconceptions about PPBS: 1) that PPBS is primarily concerned with budgeting; 2) that PPBS should displace instructional goals; 3) that it is not necessary to attend to all elements of PPBS; 4) that existing school programs can easily be converted to PPBS; and 5) that PPBS can be implemented in a brief period. PPBS can be successful only if school systems make operational all five critical PPBS elements by articulating program goals, specifying content, acquiring and implementing program software, assessing program effectiveness, and preparing program budgets. Only then will it be possible to test the ability of PPBS to produce cost/effectiveness data to aid in decision-making concerning the allocation of scarce educational resources. PPBS will produce cost/effectiveness data, but it will require that educators recognize the inadequacies of their planning, programing, evaluation, and budgeting systems and redevelop these elements in a manner which will permit PPBS to become a functional and operational management tool. (Author/LB)

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED 087441

PPBS AND THE DERIVATION OF COST/EFFECTIVENESS

Roger B. Worner

Kanawha County Schools (Charleston, W. Va.)

INTRODUCTION

Over a decade has passed since the introduction of the concept of planning-programming-budgeting systems (PPBS) in American education. Hailed as a revolutionary systems design which could enhance sound decision-making and increase school system accountability, PPBS has not borne the fruit many claimed it would. Only a small number of school systems have initiated even the basic PPBS design, and rarely does one find a school system employing the ultimate PPBS decision-making tool - cost/effectiveness analysis. Perhaps it is too early to judge the progress made by school systems in implementing this intricate approach. Unfortunately, however, the prospects for school system implementation of fully operational PPB systems in the next decade are not much more promising than they have been during the past decade. Such a circumstance is disheartening. It would appear that serious doubt has been cast on the ebullient claims that PPBS can improve school system management, and questions are being raised about the entire efficacy of its development.

It is significant to note, however, that the cloudy past and future of PPBS in public education is not due to a faulty design or an over-zealous rating of its latent management capabilities but, rather, to the crude state of school system planning, design, and execution that is such a vital concomitant to make PPBS operational and functional. It will take the maturing of educational thinking to make PPBS a functioning management tool in the decade of the 1970's. The maturation of educational thinking will be achieved through the elimination of the many prevailing misconceptions of PPBS, an understanding of its purposes, an integration of its elements, and the derivation of cost/effectiveness analysis for decision-making purposes.

MISCONCEPTIONS OF PPBS

Misconceptions and misinterpretations of PPBS are numerous and have contributed considerably to the faulty attempts to operationalize this system. The five misconceptions enumerated below are those which most frequently thwart educators in their attempts to implement and maintain a PPB system.

Budgetary Mind-set

When planning-programming-budgeting systems first became popularized, the "budgeting" element was the most recognizable and understandable to educators. As a consequence, it has been presumed that PPBS deals

---

DR. ROGER B. WORNER is the Associate Superintendent for Curriculum and Instruction in the Kanawha County Schools, Charleston, West Virginia. He is the author of the Random House book entitled Designing Curriculum for Educational Accountability: From Continuous Progress Education Through PPBS.

IR 000 185

primarily with the reorientation of a school system's conventional, function-object budget to a program budget. PPBS is commonly held to be synonymous with the term "program budgeting", and in many educator's mind, if they have operationalized a program budget, they have a functioning PPBS. Budgetary mind-set has been the single greatest contributor to the termination of total PPBS design work in school systems, since the implementation of the program budget usually suggests that PPBS activities have been completed.

Goal Displacement

Accompanying budgetary mind-set is the frequent displacement of the primary goal for implementing a PPB system. PPBS is frequently perceived to be a tool for improving fiscal integrity or management. Though this is one of the anticipated outcomes sought in implementing such a system, the broad goal for operating a school system and developing a PPB system design is to increase the educational achievement of students. To this end PPBS is designed to yield information on the allocation of scarce fiscal resources and depict actual fiscal priorities by program, service, or product. These cost data can be used with appropriate output data in making determinations about the comparative worth of competing programs, services, or products. Thus, the budget document is a mere tool to be used in making critical decisions about the primary goals of the school system - the instructional programs - not about the budget document itself. In school systems where goal displacement has taken place, the PPB system no longer exists as a support unit to improve instruction but, rather, as a major goal or outcome of the school system.

Unrecognized PPBS Elements

With the disproportionate emphasis accorded to program budgeting, other elements crucial to the PPB system remain unrecognized and undeveloped. Planning, programming, and evaluation are as essential as budgeting in a PPB system and are, in fact, more essential to increasing school system effectiveness and decision-making capacity. Failure to recognize the critical importance of planning, programming, and evaluation reduces the effectiveness of sound school system decision-making by accentuating cost outlays as the predominant factor in determining the efficacy of instructional programs.

Security With Earlier Designs

All school systems operate programs, engage in a modicum of planning, and conduct some evaluation. By virtue of their existence, school administrators frequently feel that planning, curriculum, and evaluation designs operational in their school system are adequate, with minor adjustments, to fit into a PPBS scheme. This is not an accurate perception. Curriculum and evaluation designs are generally as inadequate for PPBS systems design as is the function-object budget. In the process of constructing a PPB system, most school systems will need to redefine all planning, programming, evaluation, and budgeting systems if they are to be integrated and function in unison. The failure to correlate all of these elements is to court a system that will provide data which is questionable or erroneous.

Unrealistic Time Commitment

The effort required to design, operationalize, and maintain a PPB system never terminates. Since PPBS is change-oriented, continuous adjustment is required if the data obtained from it are to be accurate, sophisticated, and timely. Even the basic implementation of PPBS requires a three to seven year commitment before school personnel can be confident that long-range plans, program content, priorities, evaluation instruments, budgeting procedures, cost/effectiveness computation, and decision-making mechanics are accurate and suitable to local community specifications and desires.

The commitment to the design and implementation of PPBS, if it is to reach fruition, needs to be realistic and open ended. The system will become more sophisticated in the quantity and quality of the data it can produce with each succeeding year, but it necessitates continual refinement and elaboration if it is to be more than tangentially useful.

PURPOSE OF PPBS

The worth of PPBS is found in its ability to gather and present information in a manner which will permit boards of education and school administrators to make more effective decisions. In a PPB system, decisions will be rendered on the basis of program, service, or product comparisons with regard to cost and effectiveness (achievement gain, quality, durability, or other measures of effectiveness). A well-designed, functional PPBS can yield relative measures of cost and effectiveness for competing programs, services, or products which will facilitate a "best" choice of one or more programs among many competitive programs. Providing that all elements of a PPB system have been developed and are integrated, cost/effectiveness studies can be derived from a PPBS and employed by boards of education to determine the wisest expenditure of scarce school system resources to improve educational outcomes. Until the PPBS elements have been completed in a school system, data received from it will be inaccurate and incomplete, and any judgments rendered on the relative worth of competing programs, services, or products may be erroneous.

PPBS ELEMENTS

There are five critical elements necessary to operationalize PPBS in a school system - planning elements; program content; program software; evaluation instruments; and program budget. All of the PPBS elements, with the exception of the program budget, are rarely developed in school systems with sufficient detail and specifications to support PPBS.

Planning Elements

School system goals and objectives, general program objectives, program and sub-program objectives, and instructional objectives are the basic planning elements in a PPB system. With few exceptions, boards of education, school administrators, and teaching staff members have infrequently delineated anticipated outcomes for instructional or non-instructional programs, services, or products. In about the same number of instances, performance expectations on programs have been stated.

Goals and objectives furnish direction to a school system and suggest procedural and content approaches for achieving desired outcomes. They also advocate and document means by which evaluation can be accomplished and suggest parameters for acceptable performance. Finally, planning elements aid boards of education and school administrators in determining the need for changes in priorities, personnel, expenditures, materials, services, or products on the basis of comparisons of assessed (actual) performance and desired performance.

The school system which has not stated goals and objectives is in no position to assess its outcomes, since it has not identified any. Further, without identified and specified desired performance standards, all programs - even a program with zero gain - must be deemed successful.

The beginning of the PPBS process is embodied in the statement of school system, general program, program, sub-program, and instructional goals and objectives. With these elements identified, program content can be specified.

Program Content

Every instructional or non-instructional program has some elements that constitute a basis for its existence. Instructional programs, for example, exist to impart select clusters of skills, processes, experiences, or concepts. These skills, processes, experiences, or concepts constitute the unique program content of programs or courses offered in a school system. Content is distinct from one program to the next, and it is because of the variance in content that programs have different names, numbers, and sequences. Programs of the same name, number, and sequence presumably have the same content, and the skills, processes, experiences, and concepts are identifiable, comparable, and measurable.

Unfortunately, the program content for most programs and courses in school systems have not been identified. Because of this, program content for identical programs are not comparable (where one can make comparisons); they are not measurable; they are not sequenced; and they are not unique (dozens of programs or courses may emphasize identical clusters of skills, processes, experiences, or concepts).

In conjunction with planning elements (goals and objectives), program content furnishes the direction for instruction and ensures that program or sub-program objectives are accomplished. Also, program content provides the substance of evaluation and the base from which boards of education and school administrators determine whether one staffing pattern, organizational arrangement, scheduling scheme, textbook, or teacher is more suitable for the instruction of students than some alternative arrangement.

The operationalization of a PPBS that is to yield program comparison through cost/effectiveness analysis requires that school systems identify specific program content that is comparable for identical programs and measurable. In the absence of such information, program evaluation and comparison for effectiveness is impossible.

Program Software

The availability of program software in school systems is not a prerequisite for PPBS, but it is a necessity for maximizing instructional effectiveness and, hence, greater cost/effectiveness. Program software is a complex instructional material system that is constructed around the skills , processes, experiences, and concepts identified as program content for all school system programs and courses. Program software includes instructional objectives, learning activities, pre-tests, post-tests, performance criteria, and supplemental material for each skill, process, experience, or concept identified in a program, course, or cluster of courses. These materials are developed to span many grade levels and are employed to enhance the diagnosis, placement, instruction, and supplementation of the learner. Their advantage to a PPB system is their capacity to aid in appropriate student placement, their accommodation of varied levels of instructional materials and varied rates of learning, and their diversity of approach. As such, they facilitate greater achievement gain through the elimination of inaccurate placement and the removal of arbitrary constraints on learning rate. The consequence is the garnering of greater achievement with little or no additional cost input.

Few school systems have developed or purchased program software for their instructional programs. However, as increasing numbers of school systems undertake PPBS designs, it will be necessary for program software to be acquired and implemented if a true test is to be made of competing instructional alternatives. Without the availability of program software, administrators will be hard pressed to determine whether or not it is the school system's present inflexible program softwar- or other variables that are restraining student achievement gains. There is no doubt that a program software that will not accommodate the intrinsic variabilities that are common to learners will not give boards of education and school administrators the greatest achievement gain for each dollar expended.

Evaluation Instruments

The assessment of program effectiveness in school systems is of critical importance to the operation of a PPB system since it furnishes the vital output data upon which decisions, in part, are rendered about program expansion, maintenance, and termination. Due to the prevailing lack of specified planning elements and detailed program content documentation, school systems frequently find they are unable to garner data about which they can be confident and against which they are willing to tender conclusive judgments about program effectiveness. In the absence of school system planning elements and program content, administrators are prevented from constructing valid and reliable test instruments which assess local programs and, rather, are forced to rely on broader-based, antiquated, normed instruments which have questionable relationship to the goals, objectives, and skill content of local programs.

The perplexing problem for administrators is that they will be unable to develop accurate evaluation instruments to assess local programs until program content is identified and solidified. Until that task is completed, it will be difficult to garner a true assessment of program effectiveness.

With the specification of program content, administrators and teachers will be able to employ highly reliable and valid content-based tests (criterion-referenced tests) which will yield exceedingly accurate measures of the comparative effectiveness of competing instructional programs. These data, when coupled with cost information, will facilitate decision-making with a depth of analysis and understanding previously unavailable to school systems.

Program Budget

Considering the five elements necessary to operationalize PPBS in a school system, the program budget is the most widely understood and most frequently developed in school systems where a commitment has been made to PPBS. The program budget is perhaps the simplest of the five PPBS elements to operationalize since it is primarily an activity whose initiation and termination occurs in the school district's administrative headquarters, and it involves a minimal amount of detailed contact with large groups of citizens, teachers, and interest groups. Perhaps it is the relatively unfetted process of developing the program budget that sets it apart from planning, program content design, software development, and evaluation design and ensures its early completion while the remaining systems remain untouched.

Nonetheless the development of a school system program budget is essential to the complete PPBS design. The time-consuming tasks of redeveloping the organizational structure, chart of accounts, program structure, program elements, recoding, and a myriad of other tasks are vital to garner accurate cost data by program, sub-program, element, and function and object. Just as accurate achievement data are required to make decisions of priority, so too is the capability of locating and producing precise cost data. The data produced by a program budget are manifoldly more sophisticated than the conventional function-object budget could ever produce.

THE TEST OF PPBS: COST/EFFECTIVENESS

In the 1960's and early 1970's, claims have been made that PPBS is too complex, over-rated, and impractical. Judgments have been made, too frequently, on an incomplete system, one that has not been accorded the opportunity to show its wares or prove its worth.

The test of PPBS is its ability to produce cost/effectiveness data which will aid boards of education and school administrators in making difficult priority decisions about how scarce monies will be spent, which programs will live, which programs will die, and where expansions and reductions will take place. PPBS will produce cost/effectiveness data. However, the quality of the output data from this system will be equal to, and certainly no better than, the quality of the cost and effectiveness data tendered by school administrators. At the present time, most school systems operate under the false illusion that their planning elements, program content, program software, evaluation instruments, and budgeting mechanisms are sufficiently sophisticated to form the foundation for a PPB system. Such a notion is absurd. And, unfortunately, when these elements are tendered as the foundation for PPBS and the information generated by the system proves faulty, it is eminently easier to condemn PPBS as unworkable and unmanageable rather than to recognize the need for

the wholesale rethinking and redevelopment of the planning, programming, evaluation, and budgeting elements of the school district.

Those school systems that recognize the potential of PPBS and demand the acquistion of accurate data for decision-making will most often enter the PPBS cycle by initiating the planning and budgeting components at the same time. School system, general program, program, sub-program, and instructional goals and/or objectives will be specified which include measurable performance standards. The function object budget will be reorganized in program budget format to match the specifications of the school district's planning and organization.

Program content (skills, processes, experiences, and concepts) will be specified by programs and courses, and program software will be constructed to facilitate the varied placement, learning rate, and materials to maximize student achievement effectiveness. Evaluation instruments will be developed to assess the skills, processes, experiences, and concepts contained in local instructional programs with pinpoint accuracy. These instruments will be multi-grade level in design and will capture and reflect achievement gain as the difference between initial and terminal student evaluation.

The completion of the mentioned activities will facilitate cost/effectiveness comparison - with cost data gathered from the program budget document and achievement data acquired from internally-designed and validated criterion-referenced tests. As illustrated below, cost/effectiveness data will furnish school administrators with a base from which a multitude of questions can be raised and, finally, complex decisions can be made on the basis of concrete, accurate data which reflect the superiority of certain programs (of like objectives and program content as assessed on identical instruments) in relation to competing programs.

Program	Cost	Achievement Gain by Class	Cost/Effectiveness
Reading-A	$3,000	1,500 skills gained	$2.00/skill gained
Reading-B	$4,000	1,625 skills gained	$2.46/skill gained
Reading-C	$2,400	1,500 skills gained	$1.60/skill gained
Reading-D	$2,500	1,625 skills gained	$1.54/skill gained
Reading-E	$3,500	1,750 skills gained	$2.00/skill gained

The data indicate that among five competing programs with equal class size, class conditions, and program content, program cost and student achievement vary. As the chart depicts, cost figures or achievement results - separately stated - are not sufficient to render a final, accurate analysis of a "best program", but in unison, cost/effectiveness comparison provides a graphic illustration of those programs which will yield the greatest achievement return for the expenditure of school system dollars. In an instance where a school system is attempting to judge which reading program or programs should be disseminated on a district-wide basis, the cost/effectiveness comparison data would indicate that programs C and D will return far superior performance per dollar expended than each of programs A, B, and E.

With the availability of consistent and accurate data garnered from a school system's program budget and program-based criterion-referenced

tests, it is possible and practical to garner, analyze, and make judgments from cost/effectiveness data about the relative performance of school system programs.

SUMMARY

In the decade of the 1960's it would appear that planning-programming-budgeting systems have borne few of the fruits many claimed it would. This is due, in part, to five misconceptions held about PPBS and the failure of most school systems to operationalize the five critical PPBS elements: planning elements, program content, program software, evaluation instruments, and program budget.

The true test of PPBS is its ability to produce cost/effectiveness data which will aid in making difficult priority decisions about how scarce school system monies will be spent. PPBS will produce cost/effectiveness data, but it will require that educators recognize the inadequacies of their planning, programming, evaluation, and budgeting systems and redevelop these elements in a manner which will permit PPBS to become a functional and operational management tool.